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Getting Ready For Y2K

by Mike Roluti and Elee Erice

Imagine that you are one of the few power plant operators on duty in a major Reclamation hydroelectric power plant around midnight on New Year's eve, January 1, 2000, and there are record cold temperatures. You receive a request to increase power production to meet higher demands, but you cannot make the increase occur. You and a few others on duty are frantically trying to discover the culprit. The problem appears to be one or more components of the complex computerized plant control system, referred to as the supervisory control and data acquisition system (SCADA).

If you cannot locate enough people to help you run the plant manually without the use of computers, you may not be able to open the dam gates to increase the power output of the turbines. The result would be a loss of power production which could potentially affect the entire system and cause widespread brown- or black-outs. Eventually you discover that the problem was embedded microchips in SCADA components which malfunctioned when the date function could not properly roll over. It is this type of situation that Reclamation, the Department of the Interior, several other government agencies, and Congress are working to avoid.

Reclamation's Y2K Program Is Top Priority

Reclamation's Y2K program, particularly the embedded microchip activities, are the Commissioner's top priority. "Y2K is becoming a higher priority for the Department of the Interior as well as our own agency," stated Commissioner Eluid Martinez in a June 23, 1998, memorandum on Year 2000 compliance requirements. "It is critical that Reclamation do its part to effectively address this challenge so that potential disruption of critical services in the next millennium can be prevented."

Embedded microchips are miniature circuit boards that control many kinds of modern electrical devices, and can be found in most everything from vehicles to defibrillators. All embedded microchips are computers or at least include them, although some are very simple compared to a personal computer. For microchips, the year 2000 (Y2K) date problem is the potential failure of devices and systems with embedded microchips before, on, or after January 1, 2000. Difficulties from minor inconveniences to system failures could occur if our systems cannot differentiate the year 2000 (or "00") from the year 1900.

Larry Todd, acting Great Plains Regional Director, has described the Y2K effort as one of his "top concerns," and also emphasized that he fears for early hydropower or water supply interruptions in the Great Plains Region resulting from Y2K problems.

The President of the United States has declared the nation's power generation system to be one of the highest priorities, along with the transportation, banking, and finance systems. The concern is based on

the fact that, when compared with all electric utilities. Reclamation ranks as the ninth largest utility. Although hydropower production is extremely important, other mission critical functions are of concern, including the ability to provide municipal, industrial and irrigation water, as well as water for fish, wildlife and recreation.

Executive Order 13073 and other letters from the Department of the Interior and Reclamation's Commissioner officially directed staff to pursue solutions to Y2K problems, including embedded microchip devices and systems. All regions and each major Washington/Denver organization have coordinators who report and coordinate Y2K efforts related to embedded chips, information technology or computer areas, and telecommunications. The embedded chip areas inventory embedded microchip systems at Reclamation facilities for Y2K-compliance. The information technology areas include computer software, both Commercial Off The Shelf (COTS) and locally-developed applications designed to perform Reclamation-specialized functions, and computer hardware including mini and micro (PC's) computers. The telecommunications areas include hardware and software for voice and data services.

GP Region Y2K coordinators are: Dick Dye (Embedded Chip Coordinator) 406-247-7631, Bev Pfaff (Information Technology/Computer Coordinator) 406-247-7858 , and Melody Fitch (Telecommunications Coordinator), 406-247-7828.

As part of the Year 2000 effort, Reclamation and GP Region coordinators are systematically assessing the magnitude of the Y2K as it affects or may impact automated technologies used throughout the agency, and solutions are being developed to help us continue to provide effective service to our customers. Devices, such as various automated controllers containing date computational capabilities, are also being identified, accounted for, and designated for renovation where the device is not Y2K compliant. Action plans are being developed to ensure that all Reclamation facilities will be unaffected in any significant way by system failures caused by Y2K.

Reclamation Has Five Phases of Compliance Activities

Overall, there are five major phases or categories of compliance activities in Reclamation for the Y2K embedded microchip process.

The first of the five phases is **awareness**, which has involved defining and describing the Y2K problem, and it is expected to continue through March of 1999. Inventories of all devices or systems with microchips has been the primary activity thus far, which is referred to as the assessment phase. The Great Plains Region's inventory has been one of the most complete when compared with those of other regions. **Assessment** work is expected to be completed in December 1998.

The testing phase includes testing equipment to determine Y2K compliance. As a result of testing, some non-compliant embedded systems or devices may enter the renovation phase which includes their repair or retirement and replacement. Most **renovation** phase work should be completed by September 1998.

In other cases, testing may have shown that microchip equipment is compliant, and these devices enter the validation phase. Securing vendor documents or web site pages stating device compliance, or certifying compliance using a form designed specifically for this purpose is part of validation. At selected major Reclamation facilities, a technical advisory group composed of various engineering disciplines will review and document Y2K microchip compliance as an additional validation measure. **Validation** is a critical phase in the overall process, for this reason, it is of great concern to the Department.

Contingency planning is a phase designed to ensure that Reclamation facilities will continue to provide services in the event a microchip problem could not be remedied in sufficient time, or in the event one was missed during the process and fails to operate. Each Reclamation office and plant has been requested to develop a contingency or back-up plan for all mission critical equipment, and all plans should be completed by November 1998. Contingency plans are to include any additional staff expected to be on duty and associated costs.

Based on the device or system plans and in cooperating with Western Area Power Administration and other agencies, an overall contingency plan will be developed to keep power and other services going on and around year 2000. Implementing the repaired or replaced equipment, or the contingency plans is the final phase, the **implementation** phase.

For More Information

More information about the Reclamation Y2K embedded microchip effort will be available in an embedded microchip management or action plan due out in the next few weeks. Please contact Michael Roluti at (303) 445-2923 or via email at mroluti@do.usbr.gov for a copy of the plan or any questions about the microchip project.

About This Story

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